tsdsi
India's Telecom SDO

Telecommunications Standards Development Society, India

STUDY GROUP
SERVICES AND SOLUTIONS (SGSS)

Telecommunications Standards Development Society, India (TSDSI), is an autonomous not for profit Standards Development Organization for Telecom products and services in India. Our membership comprises stakeholder organizations from all segments of the Telecom Ecosystem in India including Industry, Operators, Service Providers, Manufacturers, R&D and Test Labs, Academia, PSUs and the Government. We are recognized by the Department of Telecommunications, Government of India, as India's Telecom SDO.

The technical activities of TSDSI are carried out through two Study Groups: Study Group – Networks and Study Group – Services and Solutions.

The Study Group - Services and Solutions is currently carrying out technical studies and developing standards for end-to-end service delivery capabilities and architecture based on use case requirements of various vertical sectors. It also works on aspects like interoperability, security, service delivery, Quality of Service (QoS), latency, sustainability among others. Its activities are carried out in the following working groups:

- WG1: Security: Security and Privacy aspects in the end-to-end Telecom/IoT networks & related standards, Multilayer user plane security, Post Quantum Cryptography, PQC Migration Strategies for 5G and 6G Mobile Networks, Interoperability of Multi-vendor QKD Hardware, AI/ML models and delivery of services, enablers for 6G, QLESS for mMTC in 6G among others.
- WG2: Application layer: Localization (e.g. financial transactions in Indian languages), Metaverse, UAV Drones, Telerobotics, Sustainable 6G networks, V2X applications in 6G, integrated sensing at application level, public safety use cases for 6G, AI-powered seamless tracking of supply chains among others.
- WG3: Services Architecture and Framework: Edge solutions, Critical Communications, Tactile Applications, RAN Slice Services, Cloud Interoperability and portability, Rural Broadband services and marketplace, cost modelling data services, Data Management in CIP, Technology recommendations for Telecom Service Providers, Smart Agriculture, Intelligent Transport System, Autonomous Driving System, Network Capability Exposure, Digital Twin and Split AI in 6G context, UAV/UAM, Role based Service delivery mode.

The Group has spearheaded development of following standards

STANDARDS DEVELOPED BY SGSS

- Cloud Interoperability & Portability Standards (TSDSI STD 5001 V1.0.0, Stage II TSDSI STD 5001.V1.1.0, Stage III TSDSI STD 5005 V1.0.0)
- Standardization of common data payload for adaptive traffic control systems and other Intelligent Transportation system products (TSDSI STD 5004 V1.0.0)

STANDARDS TRANSPOSED AND ADOPTED BY TEC AS NATIONAL STANDARDS

- Transposed from oneM2M specifications Release 2 and Release 3
- Transposed select set of 142 3GPP Specifications Relevant to Indian Telecom Security Assurance Requirements (ITSAR)

ADOPTED STANDARDS

- ETSI Standards Relevant to IoT and NFV Requirements

SGSS IS CURRENTLY WORKING ON DEVELOPMENT OF STANDARDS IN THE FOLLOWING AREAS

- A local language repository as an enabler for financial workflows; Integrated communication and sensing at the Application level; Architecture to support tactile applications with edge intelligence over 5GS; Rural Broadband Services Architecture (RBSA) – Operational Framework and Marketplace Design; Autonomous Driving Systems; Architecture and information flow to enable application-layer driven dynamic QoS provisioning for multi-user intelligent telerobotics and similar applications requiring exchange of multi-modal data traffic; Quantum-Safe Lightweight Secure Session (QLESS) for mMTC in 6G; Data Management using Cloud Interoperability & Portability (CIP) Platforms; Network architecture and requirements for enabling AI-powered seamless operations.

A FEW PUBLISHED TECHNICAL REPORTS

- Railway Communications using 5G: Use Cases & Reference Architecture (TSDSI TR 6053 V1.0.0)
- PQC in Embedded System to Secure the Connected Devices (TSDSI TR 6052 V1.0.0)
- Study on Security enabler for 6G (TSDSI TR 6051 V1.0.0)
- Interoperability of Multi-vendor QKD Hardware using SDN (TSDSI TR 6046 V1.0.0)
- Slice Identification in 5G RAN and Core for Scalable and Resilient Slice Services (TSDSI TR 6042 V1.0.0)
- Enablement of Common Data Payload for Agricultural Automation Solutions (TSDSI TR 6041 V1.0.0)
- Recommendations for use of Dynamic AI/ML Models for Self-Sustainable V2X Applications in 6G (TSDSI TR 6044 V1.0.0)
- Suggested Recommendations for Sustainable 6G Networks (TSDSI TR 6043 V1.0.0)
- Enhancing RBSA for 5G: Pioneering Next-Generation Connectivity Solutions (TSDSI TR 6040 V1.0.0)
- Research Directions and Collaboration on Intelligent Transport Systems Communication Standards: MAC and ISAC Perspective (TSDSI TR 6039 V1.0.0)
- Study on Semi-Autonomous Collaborative Telerobotics (TSDSI TR 6035 V1.0.0)
- Study on the Usage of oneM2M for Smart Agriculture End-to-End Monitoring in the Indian context (TSDSI TR6034 V1.0.0)
- Enhancement of the Privacy of User Subscription Identity in Future Networks (TSDSI TR6032 V1.0.0)
- Study on system requirements related to Metaverse use cases in mobile network (TSDSI TR6031 V1.0.0)
- Enablement of common ontology for adaptive traffic control system and other ITS products (TSDSI TR 6029 V1.0.0)
- Study UAV/Drone 3GPP Standard Applicability to India Use Cases (TSDSI TR 6025 V1.0.0)
- Study of Post-Quantum Cryptography for Future 5G Networks and Application Verticals (TSDSI TR 6021 V1.0.0)

For full list pls click **https://tsdsi.in/tr/**

ENGAGEMENT WITH GLOBAL STANDARDS FORUMS

ITU (https://www.itu.int/):

TSDSI is a sector member of ITU-R & ITU-T and currently participates in its select study groups and focus groups. TSDSI has been contributing regularly to the ITU-R WP 5D towards development of technical reports and recommendations related to IMT-2030 (aka 6G). TSDSI also contributes to the ITU-T SG13, FG AINN etc.

TSDSI is A.5 Certified by ITU-T.

3GPP (https://www.3gpp.org/):

TSDSI is the Organizational Partner of 3GPP, the 3rd Generation Partnership Project that develops specifications for mobile telecommunication networks, in the areas of Radio Access Networks, Architectures, Core Networks and Terminals. TSDSI members have been participating in increasing numbers and making significant contributions towards development of 3GPP Specifications. TSDSI regularly hosts meetings of 3GPP TSGs / WGs in India.

oneM2M (https://www.onem2m.org/):

TSDSI is Partner Type I of oneM2M, a global partnership project that develops IoT/M2M Specifications to enable interoperable, secure and easy-to-deploy applications & services for diverse verticals. oneM2M standardizes a middle layer of common service functions between the application layer and the IoT devices and Connectivity Layer. Currently 17 common service functions have been defined. TSDSI members have been participating and making significant contributions towards development of the oneM2M Specifications. TSDSI regularly hosts meetings of oneM2M in India. oneM2M Releases2Aand 4, transposed by TSDSI have been submitted to TEC for adoption as National Standards.

*** If you would like to participate/contribute to these forums, please reach out to secretariat@tsdsi.in**

For latest updates on technical activities, please read our newsletters at **https://tsdsi.in/newsletter/**

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tsdsi India's Telecom SDO

Registered Office: 2nd Floor, C-DOT Campus, Mandi Road, Mehrauli, New Delhi 110030, INDIA

Address for Communication: 304, Bharti School of Telecommunications Technology & Management, IIT Campus, Hauz Khas, New Delhi 110016, INDIA.

www.tsdsi.in secretariat@tsdsi.in +91 11 26597254 company/tsdsi @TSDSI_India